

US009636774B2

(12) United States Patent

Mochida

(10) Patent No.: US 9,636,774 B2 (45) Date of Patent: May 2, 2017

(54) CONTROLLER FOR LASER BEAM MACHINING FOR CONTROLLING APPROACHING OPERATION OF MACHINING HEAD

(75) Inventor: Takeshi Mochida, Minamitsuru-gun

(JP)

(73) Assignee: FANUC Corporation,

Minamitsuru-gun, Yamanashi (JP)

(*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 1017 days.

(21) Appl. No.: 13/592,482

(22) Filed: Aug. 23, 2012

(65) **Prior Publication Data**

US 2013/0103183 A1 Apr. 25, 2013

(30) Foreign Application Priority Data

Oct. 21, 2011 (JP) 2011-232103

(51) Int. Cl.

G05B 19/19 (2006.01) **B23K 26/04** (2014.01)

(52) U.S. Cl.

(58) Field of Classification Search

(56) References Cited

U.S. PATENT DOCUMENTS

7,012,215	B2*	3/2006	Mori	B23K 26/06
2003/0183608	A1*	10/2003	Yamazaki	219/121.61 B23K 26/0853 219/121.83

FOREIGN PATENT DOCUMENTS

JP	9-308979	12/1997
JP	2006-122939	5/2006
JP	2010-125518	6/2010

^{*} cited by examiner

Primary Examiner — Carlos Ortiz Rodriguez
(74) Attorney, Agent, or Firm — Drinker Biddle & Reath
LLP

(57) ABSTRACT

A controller used for irradiating a laser beam to an object from a machining head at a reference gap position is provided. The controller includes a gap sensor for detecting an amount of gap between the machining head and the object, a gap position command calculation part for producing a gap position command, a servo mechanism for driving the machining head to the reference gap position, a servo position deviation reading part for reading an amount of position deviation of the servo mechanism, a position gain calculation part for calculating a corrected position gain of the servo mechanism, based on the amount of position deviation of the servo mechanism and a position gain replacing part for replacing the position gain of the servo mechanism with the corrected position gain.

4 Claims, 5 Drawing Sheets

